

ABSTRACT

An apparatus, system and method for retaining the maximum speed of flip-flop metastability based random number generators includes a fixed delay unit having an input for receiving a common signal from a digital signal generator, and a variable delay unit having an input also for receiving the common signal from the digital signal generator. Each of the delay units is attached to the input of a respective logic gate. A frequency measurement of the occurrences of metastability, which is the speed of the random bit generation and delay tuning module 312 receives an output of one of the first NAND gates, checks the frequency of random number bit generation and updates the variable delay unit to according to predetermined criteria to tune the delay so as to maximize the speed of the random bit generation. An algorithm is used to determine whether the optimum delay is equal to, smaller or larger than the delay used to achieve the measured frequency.